

Pushing the Envelope			
2005 Science			
Content Standards			
Hawaii Science			
Grade 6			
Activity/Lesson	State	Standards	
Chemistry (pgs. 25-41)	HI	SCI.6.SC.6.6.6	Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe: Describe and compare the physical and chemical properties of different substances
Chemistry (pgs. 25-41)	HI	SCI.6.SC.6.6.8	Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe: Recognize changes that indicate that a chemical reaction has taken place
Physics and Math (pgs. 43-63)	HI	SCI.6.SC.6.7.1	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Describe examples of how forces affect an object's motion
Rocket Activity (pgs. 69-75)	HI	SCI.6.SC.6.7.1	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Describe examples of how forces affect an object's motion
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Hawaii Science			
Grades 9-12 (Physical Science)			
Activity/Lesson	State	Standards	
Chemistry (pgs. 25-41)	HI	SCI.9-12.SC.PS.6.1	Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe: Describe endothermic and exothermic chemical reactions
Chemistry (pgs. 25-41)	HI	SCI.9-12.SC.PS.6.11	Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe: Describe a variety of chemical reactions
Physics and Math (pgs. 43-63)	HI	SCI.9-12.SC.PS.6.6	Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe: Explain and provide examples of electromagnetic radiation and sound using a wave model

Physics and Math (pgs. 43-63)	HI	SCI.9- 12.SC.PS.7.1	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Apply the laws of motion to determine the effects of forces on the linear motion of objects
Physics and Math (pgs. 43-63)	HI	SCI.9- 12.SC.PS.7.2	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Use vectors to explain force and motion
Physics and Math (pgs. 43-63)	HI	SCI.9- 12.SC.PS.7.3	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Explain the relationship among the gravitational force, the mass of the objects, and the distance between objects
Rocket Activity (pgs. 69-75)	HI	SCI.9- 12.SC.PS.7.1	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Apply the laws of motion to determine the effects of forces on the linear motion of objects
Rocket Activity (pgs. 69-75)	HI	SCI.9- 12.SC.PS.7.2	Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic: Use vectors to explain force and motion
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Grades 9-12 (Physics)			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	HI	SCI.9- 12.SC.PH.4.4	Understand the relationship between force, mass, and motion of objects: Analyze motion in terms of position, time, velocity and acceleration, both quantitatively and qualitatively
Physics and Math (pgs. 43-63)	HI	SCI.9- 12.SC.PH.3.1	Understand the nature of momentum and energy transformations: Measure or determine physical quantities such as density and mass of samples

Physics and Math (pgs. 43-63)	HI	SCI.9-12.SC.PH.4.6	Understand the relationship between force, mass, and motion of objects: Use Newton's Laws (e.g., $F = ma$) together with the kinematic equations to predict the motion of an object
Physics and Math (pgs. 43-63)	HI	SCI.9-12.SC.PH.4.7	Understand the relationship between force, mass, and motion of objects: Resolve two dimensional vectors into their components, and use the resultant vectors to solve problems involving force and motion, both graphically and quantitatively
Physics and Math (pgs. 43-63)	HI	SCI.9-12.SC.PH.8.2	Understand the general concepts related to the theory of special relativity, and the constituent particles that make up atoms: Explain that Newton's Laws are not exact but give a very good approximation unless an object is moving close to the speed of light or is small enough that quantum effects are important
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